

L8 ANSWER 1 OF 2 MEDLINE on STN  
AN 1998126188 MEDLINE  
DN 98126188 PubMed ID: 9466712  
TI Leukemia inhibitory factor and ciliary neurotrophic factor regulate **dendritic** growth in cultures of rat sympathetic neurons.  
AU Guo X; Metzler-Northrup J; Lein P; Rueger D; Higgins D  
CS Department of Pharmacology and Toxicology, State University of New York, Buffalo 14214, USA.  
SO (BRAIN RESEARCH. DEVELOPMENTAL BRAIN RESEARCH, (1997 Dec 19) 104 (1-2) 101-10. Journal code: 8908639. ISSN: 0165-3806.)  
CY Netherlands  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 199803  
ED Entered STN: 19980407  
Last Updated on STN: 20000303  
Entered Medline: 19980320  
AB Cytokines such as leukemia inhibitory factor (LIF) and ciliary neurotrophic factor (CNTF) have previously been shown to regulate neurotransmitter and neuropeptide synthesis in sympathetic neurons [P.H. Patterson, Leukemia inhibitory factor, a cytokine at the interface between neurobiology and immunology, Proc. Natl. Acad. Sci. USA 91 (1994) 7833-7835]. We considered the possibility that these agents may also affect the development of neuronal cell shape. Intracellular dye injection and immunocytochemistry were used to assess **dendritic** growth in cultures of perinatal rat sympathetic neurons and the effects of LIF and CNTF were compared to those of osteogenic protein-1 (OP-1), a growth factor that induces profuse **dendritic** growth in these neurons [P. Lein, M. Johnson, X. Guo, D. Rueger, D. Higgins, Osteogenic protein-1 induces **dendritic** growth in rat sympathetic neurons, Neuron 15 (1995) 597-605]. Under control conditions, sympathetic neurons formed only axons. Exposure to either LIF or OP-1 stimulated **dendritic** growth, but the magnitude of the response to LIF was much less than that obtained with OP-1 with respect to both **dendritic** number and length. Simultaneous exposure to LIF and OP-1 resulted in **dendritic** growth equivalent to that observed in the presence of LIF alone, suggesting that LIF inhibits the response of neurons to OP-1. Both the stimulatory and inhibitory effects of LIF were mimicked by CNTF, but not by other growth factors. These data suggest that LIF and CNTF regulate **dendritic** development in a complex manner that is dependent on both the morphological state of the neuron and the presence of other growth factors. However, the net effect of exposure to these cytokines appears to be the production of a population of neurons with rudimentary arbors consisting of only one or two short **dendrites**.

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L8 ANSWER 2 OF 2 MEDLINE on STN  
AN 96009856 MEDLINE  
DN 96009856 PubMed ID: 7546739  
TI Osteogenic protein-1 induces **dendritic** growth in rat sympathetic neurons.  
AU Lein P; Johnson M; Guo X; Rueger D; Higgins D  
CS Department of Biology, Canisius College, Buffalo, New York 14208, USA.  
SO NEURON, (1995 Sep) 15 (3) 597-605.  
Journal code: 8809320. ISSN: 0896-6273.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals

EM 199510  
ED Entered STN: 19951227  
Last Updated on STN: 19980206  
Entered Medline: 19951025  
AB Sympathetic neurons from perinatal rat pups extend only a single axon when maintained in culture in the absence of glia and serum. Exposure to recombinant osteogenic protein-1 (OP-1) selectively induces the formation of **dendrites** that correctly segregate and modify cytoskeletal and membrane proteins and form **synaptic** contacts of appropriate polarity. OP-1 requires nerve growth factor (NGF) as a cofactor, and, in the presence of optimal concentrations of NGF, OP-1-induced **dendritic** growth from cultured perinatal neurons is comparable to that observed in situ. Sympathetic neuroblasts that had not formed **dendrites** in situ also responded to OP-1 in culture, indicating that OP-1 can cause de novo formation as well as regeneration of **dendrites**. These data imply that specific signals can regulate the development of neuronal shape and polarity.

L4 ANSWER 13 OF 32 MEDLINE on STN  
 AN 95223110 MEDLINE  
 DN 95223110 PubMed ID: 7707865  
 TI Developmental alteration and neuron-specific expression of bone  
**morphogenetic** protein-6 (BMP-6) mRNA in rodent brain.  
 AU Tomizawa K; Matsui H; Kondo E; Miyamoto K; Tokuda M; Itano T; Nagahata S;  
 Akagi T; Hatase O  
 CS Department of Physiology, Kagawa Medical School, Japan.  
 SO (BRAIN RESEARCH. MOLECULAR BRAIN RESEARCH, (1995 Jan) 28 (1)  
 122-8. )  
 Journal code: 8908640. ISSN: 0169-328X.  
 CY Netherlands  
 DT Journal; Article; (JOURNAL ARTICLE)  
 LA English  
 FS Priority Journals  
 EM 199505  
 ED Entered STN: 19950518  
 Last Updated on STN: 20000303  
 Entered Medline: 19950510  
 AB Bone **morphogenetic** proteins (BMPs) are a group of proteins which  
 induce bone formation from mesenchymal cells. The existence of BMPs in  
 the nervous system as well as in bone tissue has recently been reported.  
 In this study, we show that BMP-6 is neuron-specific, and describe the  
 temporal and spatial expression patterns of BMP-6 mRNA in the developing  
 rat and gerbil brain. Northern blot analysis showed that the BMP-6  
 transcript level was specifically high from newborn to 3 weeks after birth  
 compared with those in fetal and adult rats. In situ hybridization showed  
 that most of the neurons possessed high levels of BMP-6 mRNA in the  
 neonatal brain, while in the adult brain, BMP-6 mRNA level was  
 significantly decreased in most of the neurons except those in  
**hippocampus** which retained high levels. Furthermore, to show that  
 the BMP-6 expression was specific to neurons, we induced delayed neuronal  
 cell death and compensative glial cell proliferation in the gerbil  
**hippocampus** by transient ischemia. Our findings collectively  
 suggest that BMP-6 is neuron-specific and may play important roles in  
 neuronal maturation and **synapse** formation.